

TH

Notice of Allowability

Application No.

10/718,676

Examiner

Kevin Quarterman

Applicant(s)

YAMAUCHI, TAISUKE

Art Unit

2879

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 25 June 2007.
2. ☒ The allowed claim(s) is/are 1-23.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|--|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____. |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____ | 7. <input type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____. |

DETAILED ACTION

Response to Amendment

1. Applicant's remarks received 25 June 2007 have been entered.

Election/Restrictions

2. Claim 1 is directed to an allowable product. Pursuant to the procedures set forth in MPEP § 821.04(B), claims 12-13, directed to the process of making or using an allowable product, previously withdrawn from consideration as a result of a restriction requirement, are hereby rejoined and fully examined for patentability under 37 CFR 1.104.

3. Because all claims previously withdrawn from consideration under 37 CFR 1.142 have been rejoined, **the restriction requirement as set forth in the Office action mailed on 11 January 2006 is hereby withdrawn.** In view of the withdrawal of the restriction requirement as to the rejoined inventions, applicant(s) are advised that if any claim presented in a continuation or divisional application is anticipated by, or includes all the limitations of, a claim that is allowable in the present application, such claim may be subject to provisional statutory and/or nonstatutory double patenting rejections over the claims of the instant application. Once the restriction requirement is withdrawn, the provisions of 35 U.S.C. 121 are no longer applicable. See *In re Ziegler*, 443 F.2d 1211, 1215, 170 USPQ 129, 131-32 (CCPA 1971). See also MPEP § 804.01.

Allowable Subject Matter

4. Claims 1-23 are allowed.

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5. The following is an examiner's statement of reasons for allowance: Applicant's submission of certified translations of priority documents is sufficient to overcome the outstanding rejection.

6. Thus, regarding independent claim 1, the prior art of record neither shows or suggests a self-emitting element comprising, in addition to other limitations of the claim, an angle changer that is disposed at a periphery of a light-emitting layer and changes a direction of the light propagating in a protective layer so that the light is incident on the interface at less than a critical angle. Due to their dependency upon independent claim 1, claims 2-7 and 12-13 are also allowable.

7. Regarding independent claim 8, the prior art of record neither shows or suggests a display panel comprising, in addition to other limitations of the claim, a plurality of angle changers, each of the angle changers being disposed at a periphery of each of the light-emitting layers, that change direction of the light propagating in the protective layer so that the light is incident on the interface at less than a critical angle. Due to their dependency upon independent claim 8, claims 9-10 and are also allowable.

8. Regarding independent claim 11, the prior art of record neither shows or suggests a display apparatus comprising, in addition to other limitations of the claim, a plurality of angle changers, each of the angle changers being disposed at a periphery of each of the light-emitting layers, that change direction of the light propagating in the protective layer so that the light is incident on the interface at less than a critical angle.

9. Regarding independent claim 14, the prior art of record neither shows or suggests a self-emitting element comprising, in addition to other limitations of the claim,

an angle changer that changes a direction of light output from a light-emitting element to a direction of the emitting side, wherein a refractive index of the output layer is either almost the same as or greater than a refractive index of the light-emitting element. Due to their dependency upon independent claim 14, claims 15-18 are also allowable.

10. Regarding independent claim 19, the prior art of record neither shows or suggests a display panel comprising, in addition to other limitations of the claim, an angle changer that changes a direction of light output from a light-emitting element to a direction of the emitting side, wherein a refractive index of the output layer is either almost the same as or greater than a refractive index of the light-emitting element.

11. Regarding independent claim 20, the prior art of record neither shows or suggests a display apparatus comprising, in addition to other limitations of the claim, an angle changer that changes a direction of light output from a light-emitting element to a direction of the emitting side, wherein a refractive index of the output layer is either almost the same as or greater than a refractive index of the light-emitting element.

12. Regarding independent claim 21, the prior art of record neither shows or suggests a self-emitting element comprising, in addition to other limitations of the claim, an angle changer that is disposed at a periphery of the light-emitting layer and changes a direction of the light propagating in the protective layer so that the light is incident on the interface at less than a critical angle, wherein a refractive index of the protective layer is either almost the same as or greater than a refractive index of the light-emitting layer.

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13. Regarding independent claim 22, the prior art of record neither shows or suggests a self-emitting element comprising, in addition to other limitations of the claim, an angle changer that changes a direction of light output from a light-emitting element to a direction of the emitting side, wherein the angle changer is a micro lens, and a refractive index of the output layer is either almost the same as or greater than a refractive index of the light-emitting element.

14. Regarding independent claim 23, the prior art of record neither shows or suggests a self-emitting element comprising, in addition to other limitations of the claim, an angle changer that changes a direction of light output from a light-emitting element to a direction of the emitting side, wherein the angle changer is a micro prism which changes the direction of the light by refraction, and a refractive index of the output layer is either almost the same as or greater than a refractive index of the light-emitting element.

15. The subject angle changers described earlier are provided for improving light extraction efficiency. The design is new and unique to the art.

16. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Quarterman whose telephone number is (571) 272-2461. The examiner can normally be reached on M-TH (7-5:30).


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel can be reached on (571) 272-2457. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kevin Quarterman
Examiner
Art Unit 2879

kq

20 July 2007


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